

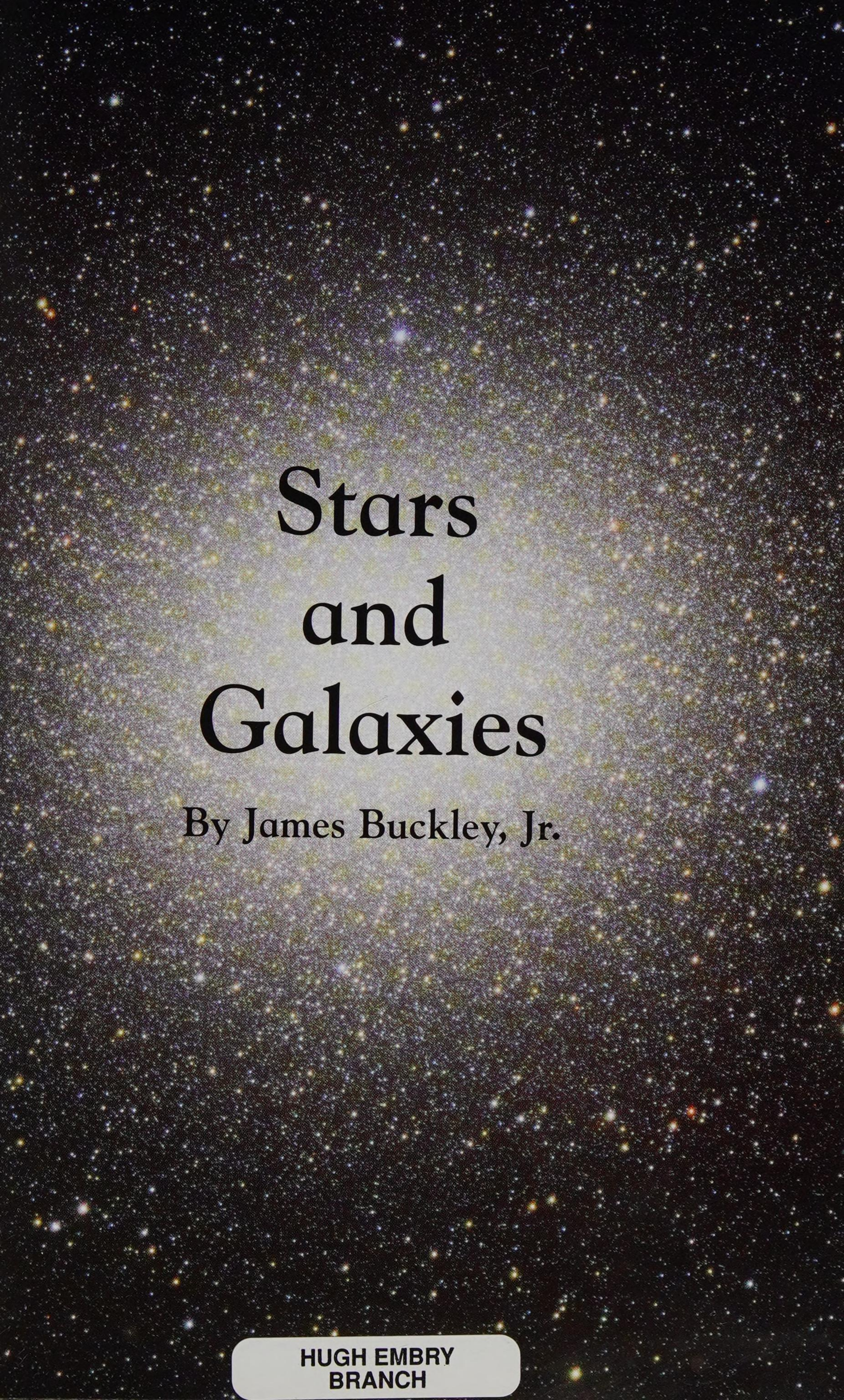


STARS AND GALAXIES



Packed with FACTS you need to READ!

James Buckley, Jr.



Stars and Galaxies

By James Buckley, Jr.

HUGH EMBRY
BRANCH



Penguin
Random
House

US Editor Margaret Parrish
US Senior Editor Shannon Beatty
Senior Editor Caryn Jenner
Assistant Editor Kritika Gupta
Art Editors Emma Hobson, Roohi Rais, Mohd. Zishan
Design Intern Sonali Mahthan
Jacket Co-ordinator Francesca Young
Jacket Designers Dheeraj Arora, Amy Keast
DTP Designer Vijay Kandwal, Dheeraj Singh
Picture Researcher Nishwan Rasool
Producer, Pre-Production Nadine King
Senior Producer Srijana Gurung
Deputy Managing Editor Vineetha Mokkal
Managing Editor Laura Gilbert
Managing Art Editors Neha Ahuja Chowdhry, Diane Peyton Jones
Art Director Martin Wilson
Publisher Sarah Larter

First American Edition, 2017
Published in the United States by DK Publishing
345 Hudson Street, New York, New York 10014

Copyright © 2017 Dorling Kindersley Limited
DK, a Division of Penguin Random House LLC
17 18 19 20 21 10 9 8 7 6 5 4 3 2 1
001—299293—April/17

All rights reserved. Without limiting the rights under copyright reserved above, no part of this publication may be reproduced, stored in or introduced into a retrieval system, or transmitted, in any form, or by any means (electronic, mechanical, photocopying, recording, or otherwise), without the prior written permission of the copyright owner. Published in Great Britain by Dorling Kindersley Limited.

A catalog record for this book is available from the Library of Congress.

ISBN: 978-1-4654-5863-6 (Paperback)
ISBN: 978-1-4654-5865-0 (Hardcover)

DK books are available at special discounts when purchased in bulk for sales promotions, premiums, fund-raising, or educational use. For details, contact:

DK Publishing Special Markets
345 Hudson Street, New York, New York 10014
SpecialSales@dk.com

Printed and bound in China.

The publisher would like to thank the following for their kind permission to reproduce their photographs:

(Key: a-above; b-below/bottom; c-center; f-far; l-left; r-right; t-top)

1 ESO: ESO / INAF-VST / OmegaCAM / A. Grado, L. Limatola / INAF-Capodimonte Observatory. 4-5 Getty Images: Harpazo_Hope. 6-7 NASA:ESA / Hubble & NASA, Judy Schmidt. 8 Dreamstime.com: Lilkar. 9 Dreamstime.com: Lilkar. 10-11 ESA / Hubble: NASA, ESA, Harald Ebeling(University of Hawaii at Manoa) & Jean-Paul Kneib (LAM). 12-13 ESA / Hubble: NASA (background). 15 Alamy Stock Photo: Angelina Stoykova. 16-17 Alamy Stock Photo: Angelina Stoykova. 18 ESA / Hubble: NASA, ESA, N. Evans (Harvard-Smithsonian CfA), and H. Bond (STScI). 19 Alamy Stock Photo: Stocktrek Images, Inc. (cb). 20-21 Alamy Stock Photo: Patrick Shyu. 22-23 ESA / Hubble: NASA. 24-25 ESA / Hubble: ESO. 26 NASA and The Hubble Heritage Team (AURA/STScI): NASA, ESA, and the Hubble SM4 ERO Team. 28-29 ESO: ESO / José Francisco Salgado. 30-31 ESA / Hubble: NASA, ESA, G. Illingworth, D. Magee, and P. Oesch (University of California, Santa Cruz), R. Bouwens (Leiden University), and the HUDF09 Team. 32 NASA: SDO (bl). 32-33 ESA / Hubble: NASA (background). NASA: JPL-Caltech (br). 33 ESA / Hubble: NASA, ESA, G. Illingworth, D. Magee, and P. Oesch (University of California, Santa Cruz), R. Bouwens (Leiden University), and the HUDF09 Team (cra). NASA: JPL-Caltech (cl). 34-35 123RF.com: Yuriy Mazur. 36 Dreamstime.com: Sissen2011 (bl). ESA / Hubble: NASA, ESA, and A. Dyer (background). 37 Dreamstime.com: Raphael Niederer (t); Keren Segev (b). 38-39 NASA. 39 ESA / Hubble: NASA, ESA, and The Hubble Heritage Team (STScI / AURA) (b). NASA. 40-41 Alamy Stock Photo: B.A.E. Inc.. 42-43 ESA / Hubble: NASA (background). 44-45 ESA / Hubble: NASA (background)

Jacket images: Front: Getty Images: Marco Lorenzi, www.glitteringlights.com; Back: Getty Images: Christophe Lehenaff t;

Front Endpapers: NASA: X-ray: NASA / CXC / MSSL / R.Soria et al, Optical: AURA / Gemini OBs;
Back Endpapers: NASA: X-ray: NASA / CXC / MSSL / R.Soria et al, Optical: AURA / Gemini OBs

All other images © Dorling Kindersley
For further information see: www.dkimages.com

A WORLD OF IDEAS:
SEE ALL THERE IS TO KNOW

www.dk.com

Contents

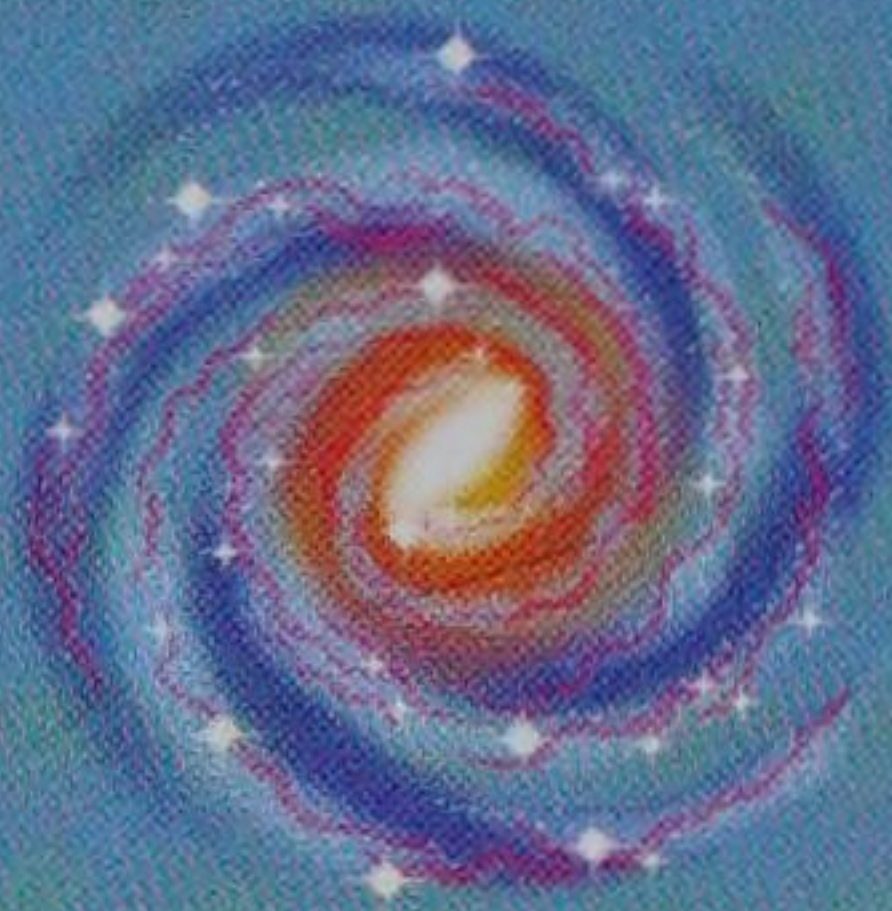
- 4 Chapter 1: Starlight
- 12 *Star Facts*
- 14 Chapter 2: Star Pictures
- 22 *The Sky Zoo*
- 24 Chapter 3: Groups of Stars
- 32 *Our Place in Space*
- 34 Chapter 4: Watching the Stars
- 42 *Star Map*
- 43 Stars and Galaxies Quiz
- 44 Glossary
- 46 Guide for Parents
- 48 Index

Words in **bold** appear
in the glossary.



Chapter 1

Starlight

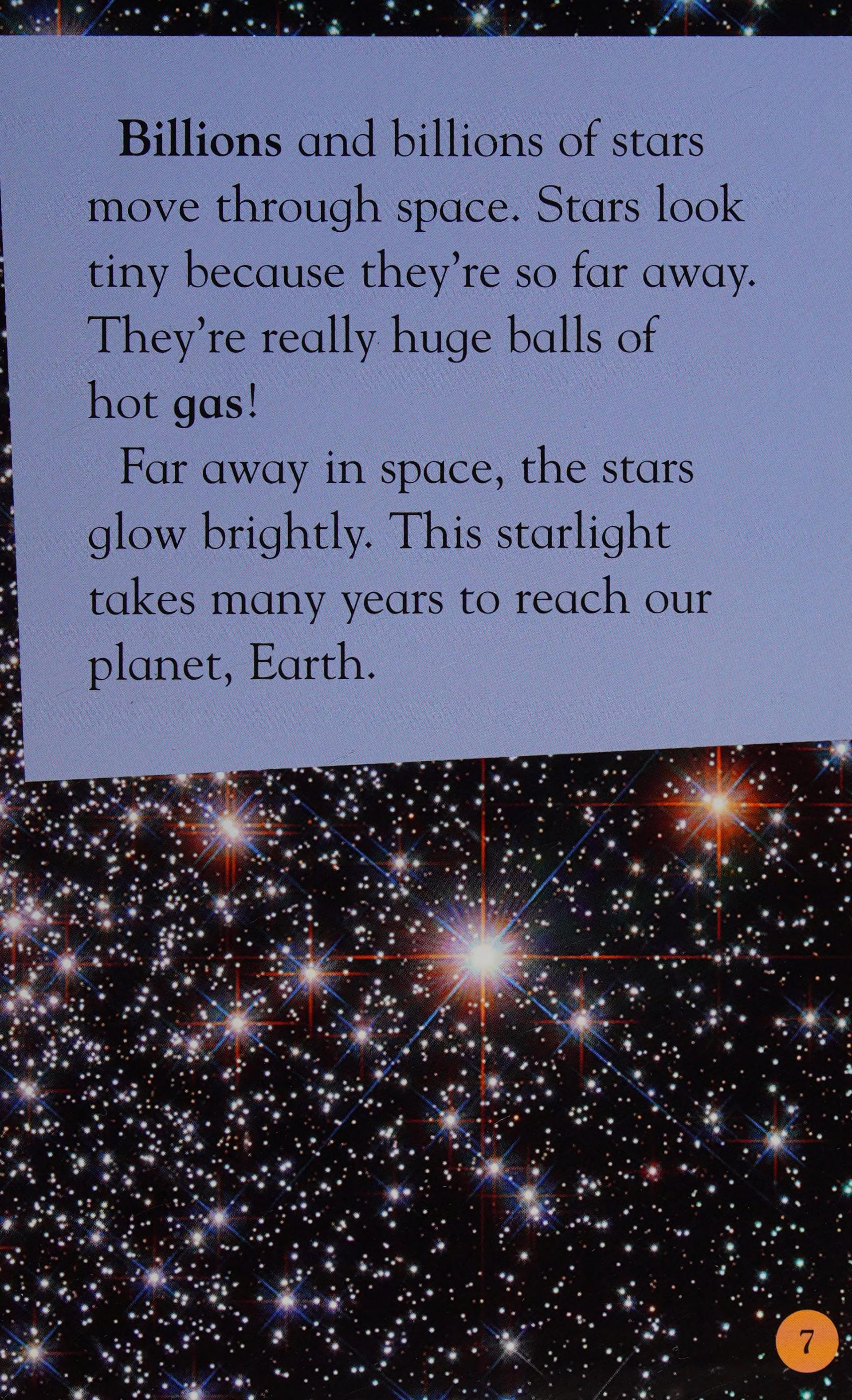


Stars fill the night sky with twinkling light. They make the night come alive!

Stars move around in space. They are far, far away from us. We see stars as tiny points of light.

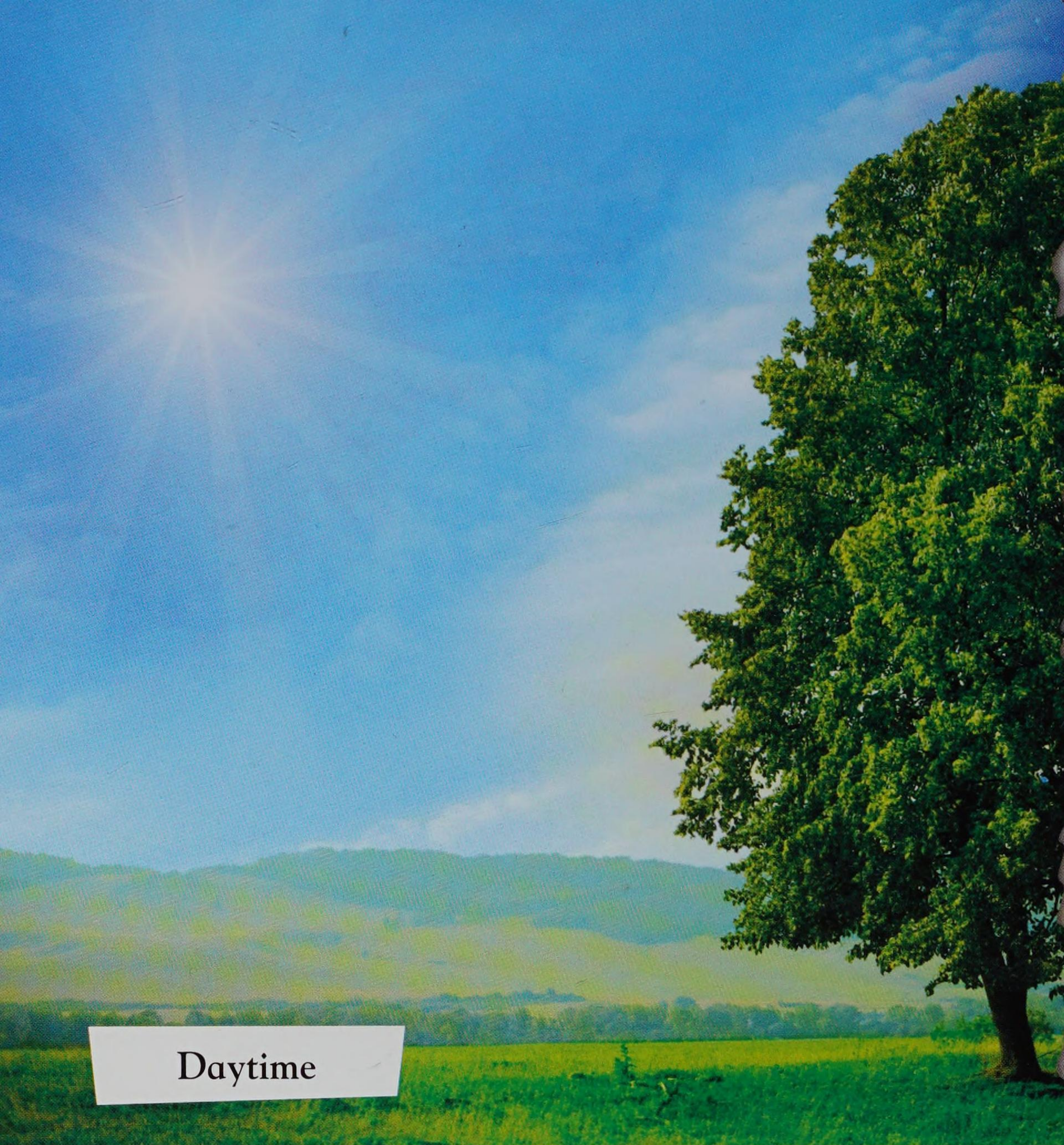






Billions and billions of stars move through space. Stars look tiny because they're so far away. They're really huge balls of hot gas!

Far away in space, the stars glow brightly. This starlight takes many years to reach our planet, Earth.



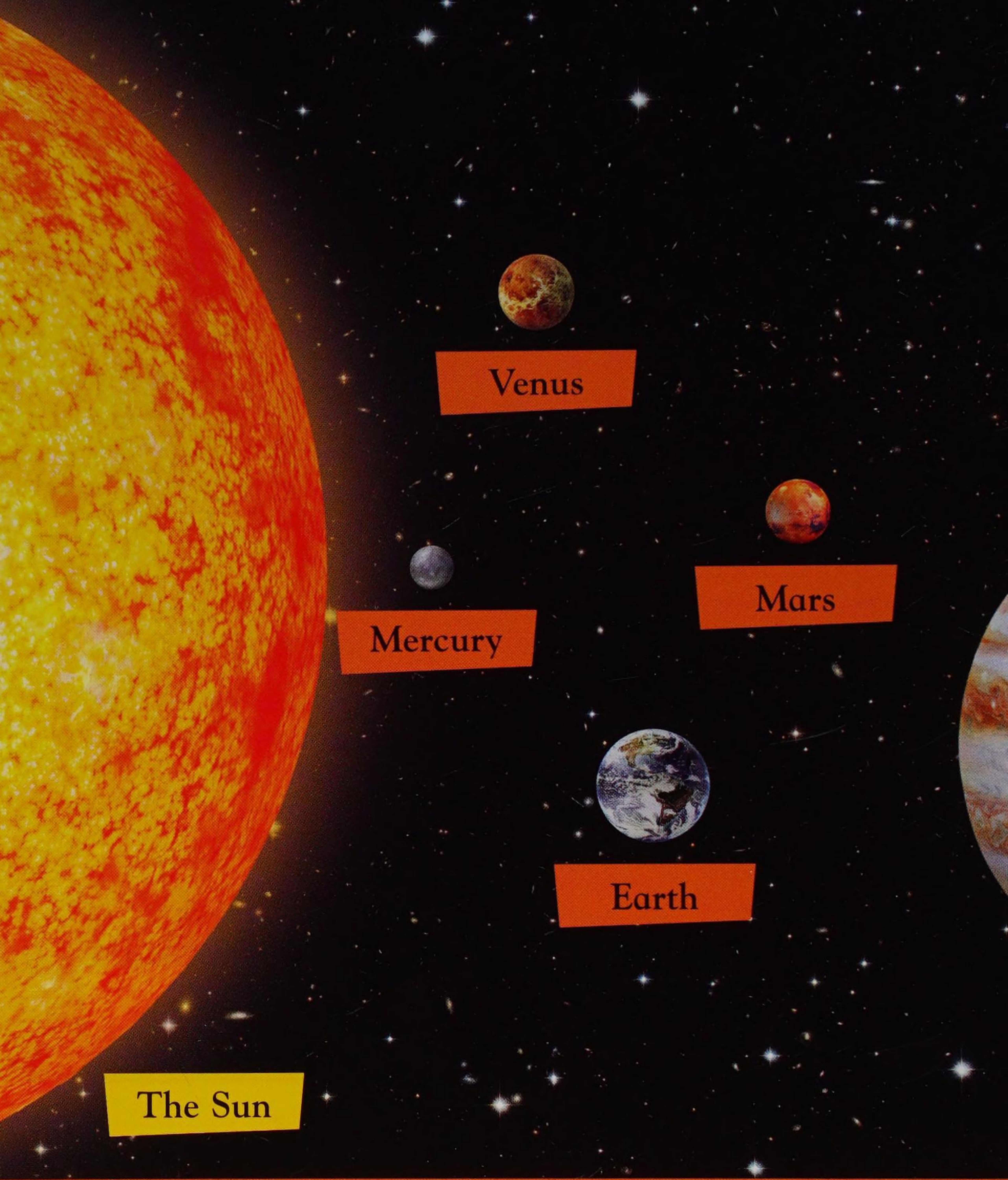
Daytime

We can't see stars in the daytime because the Sun is too bright. The Sun is a star, too! It is the closest star to Earth.



Nighttime

The Sun gives Earth day
and night, heat and light.
Without the Sun, there would
be no life on Earth.



The Sun

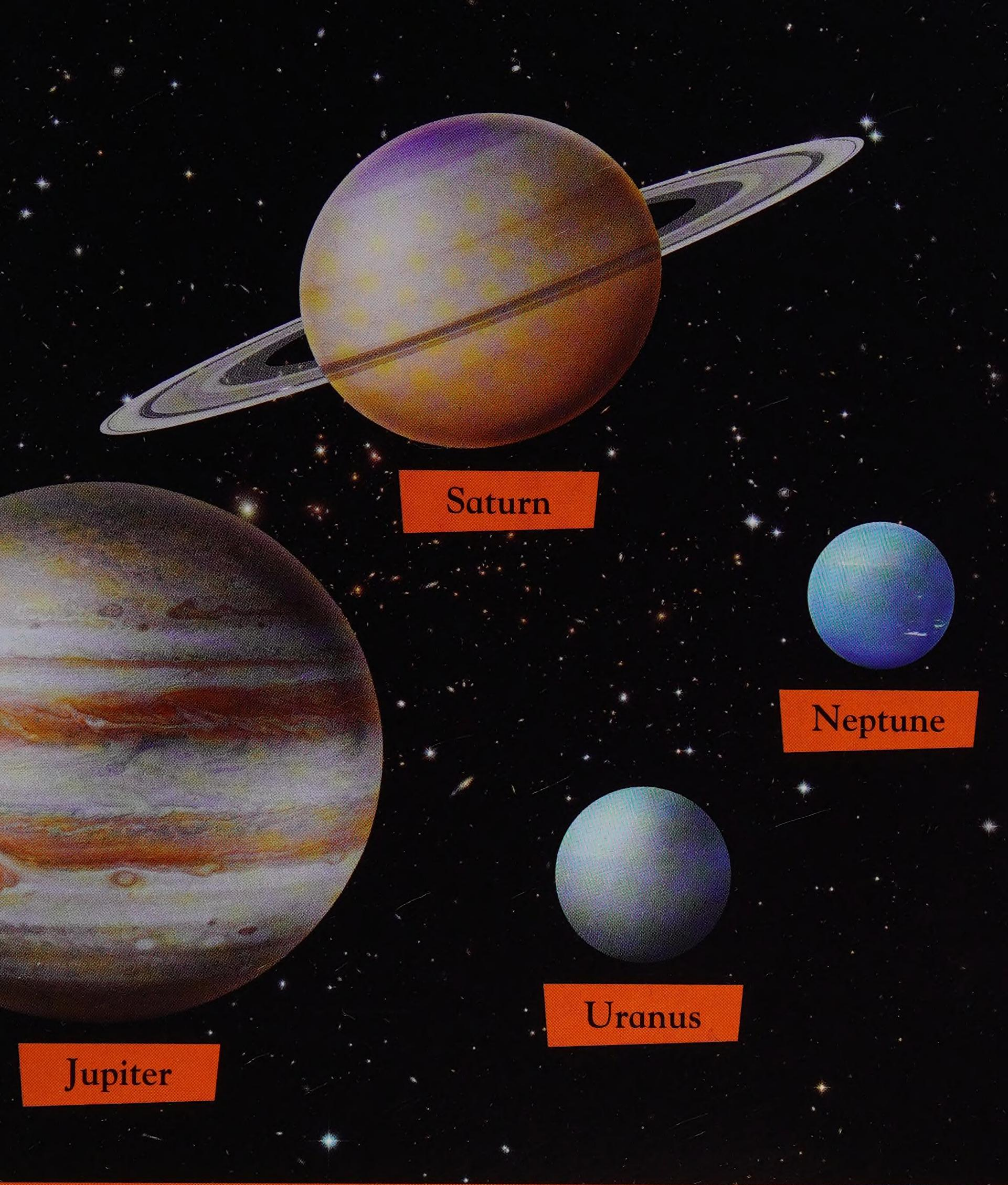
Venus

Mercury

Mars

Earth

Earth is one of eight planets that orbit around the Sun. Other objects in space also orbit around the Sun.



Saturn

Neptune

Uranus

Jupiter


The Sun, and everything that orbits around it, is called the Solar System.

Star Facts

- ★ Stars can be red, yellow, blue, or white.
- ★ Stars come in many sizes, from a small dwarf to a huge supergiant!
- ★ The Sun is a yellow dwarf star. Imagine how big a supergiant star must be!

This red giant star is 25 times bigger than the Sun.

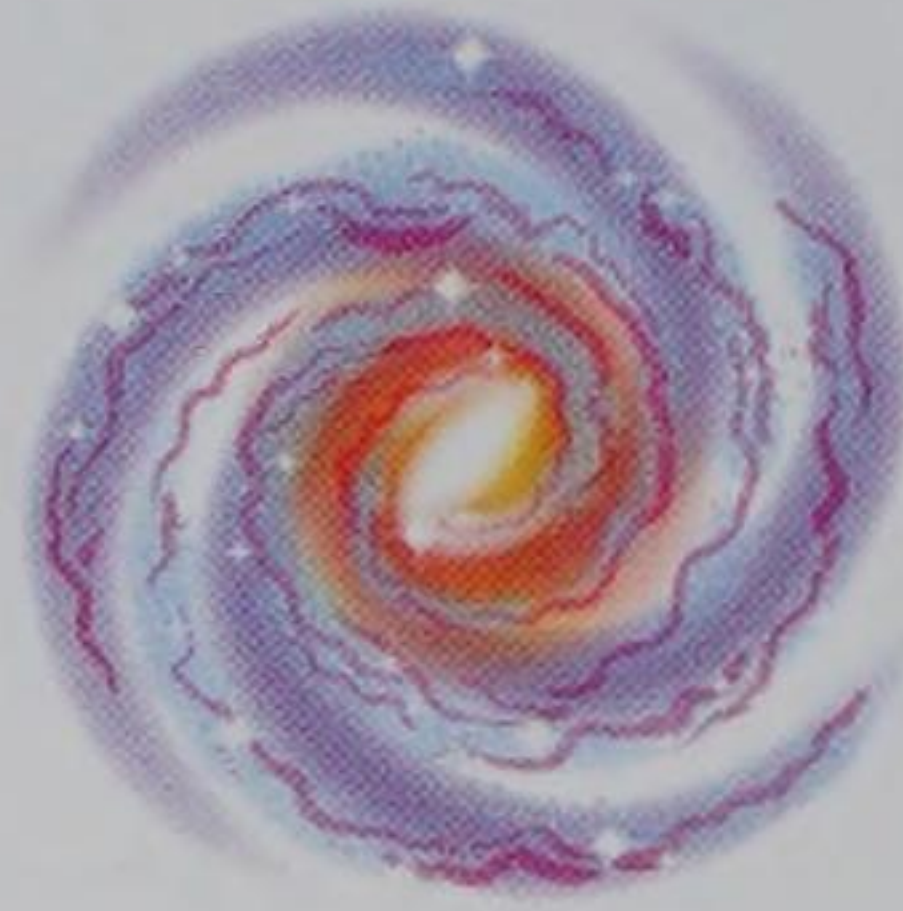
The Sun




This blue supergiant star
is 75 times bigger than
the Sun.

Chapter 2

Star Pictures



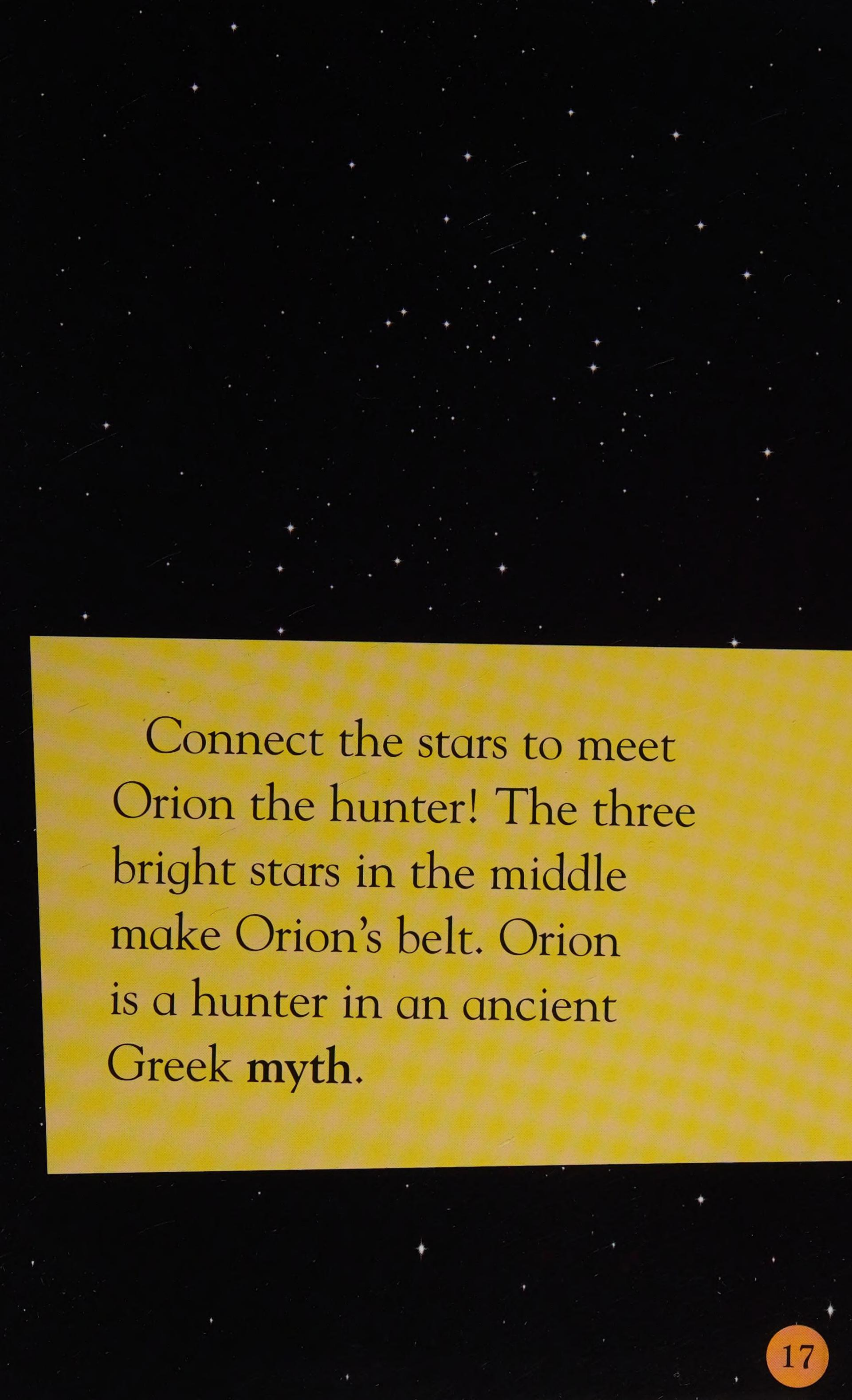
Long ago, people connected the “dots” of the stars to make pictures. They called these star pictures “constellations.” Can you see a picture in the stars on the page opposite?



The constellation Orion



Orion the hunter

The background of the page is a dark, black night sky filled with numerous small, bright white stars of varying sizes. Some stars appear as simple points of light, while others have a slight diffraction pattern. A large, solid yellow rectangle is positioned in the lower half of the image, containing black text. The text is a paragraph explaining how to identify Orion the hunter by connecting three stars in its belt.

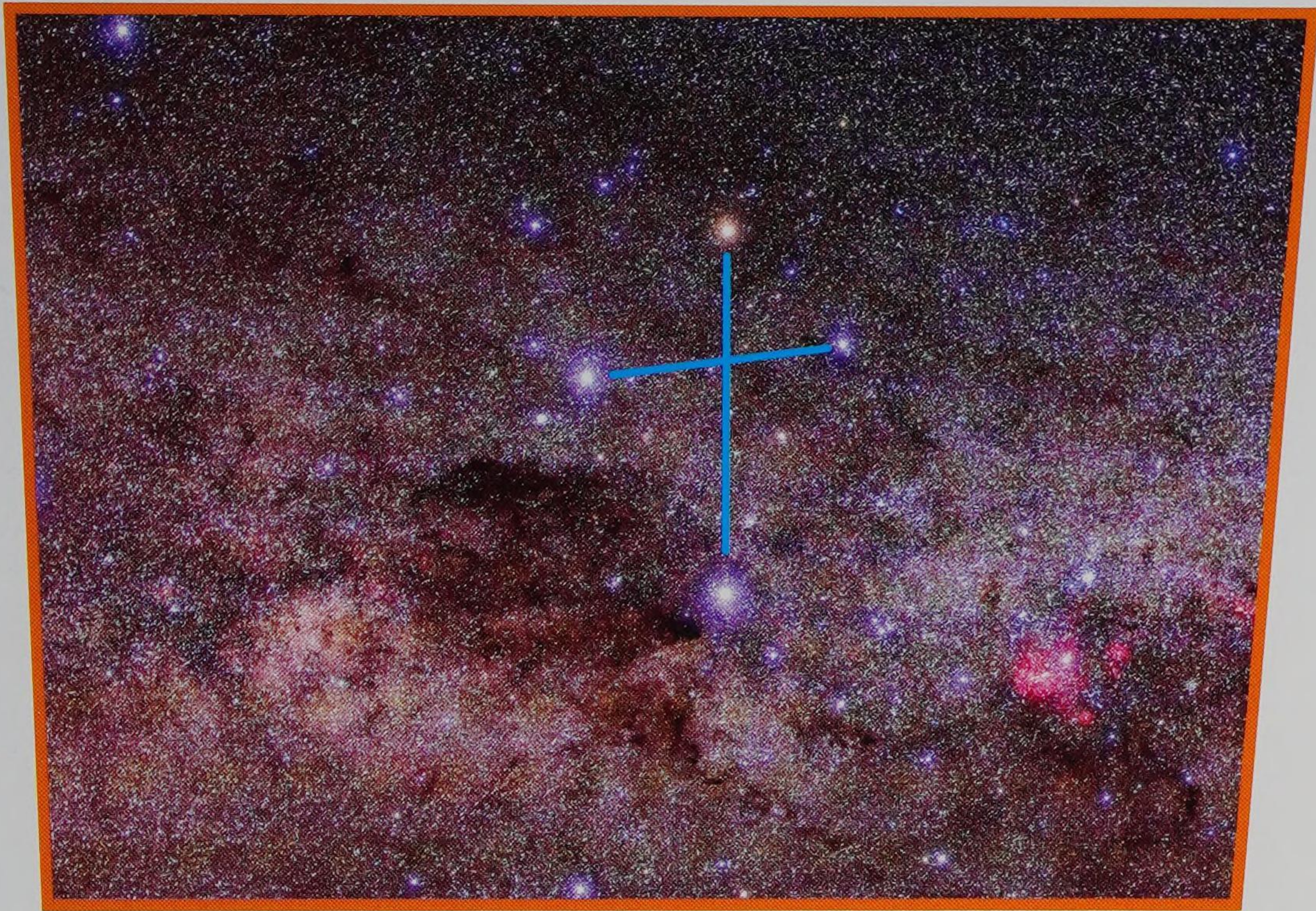
Connect the stars to meet Orion the hunter! The three bright stars in the middle make Orion's belt. Orion is a hunter in an ancient Greek myth.

North Star

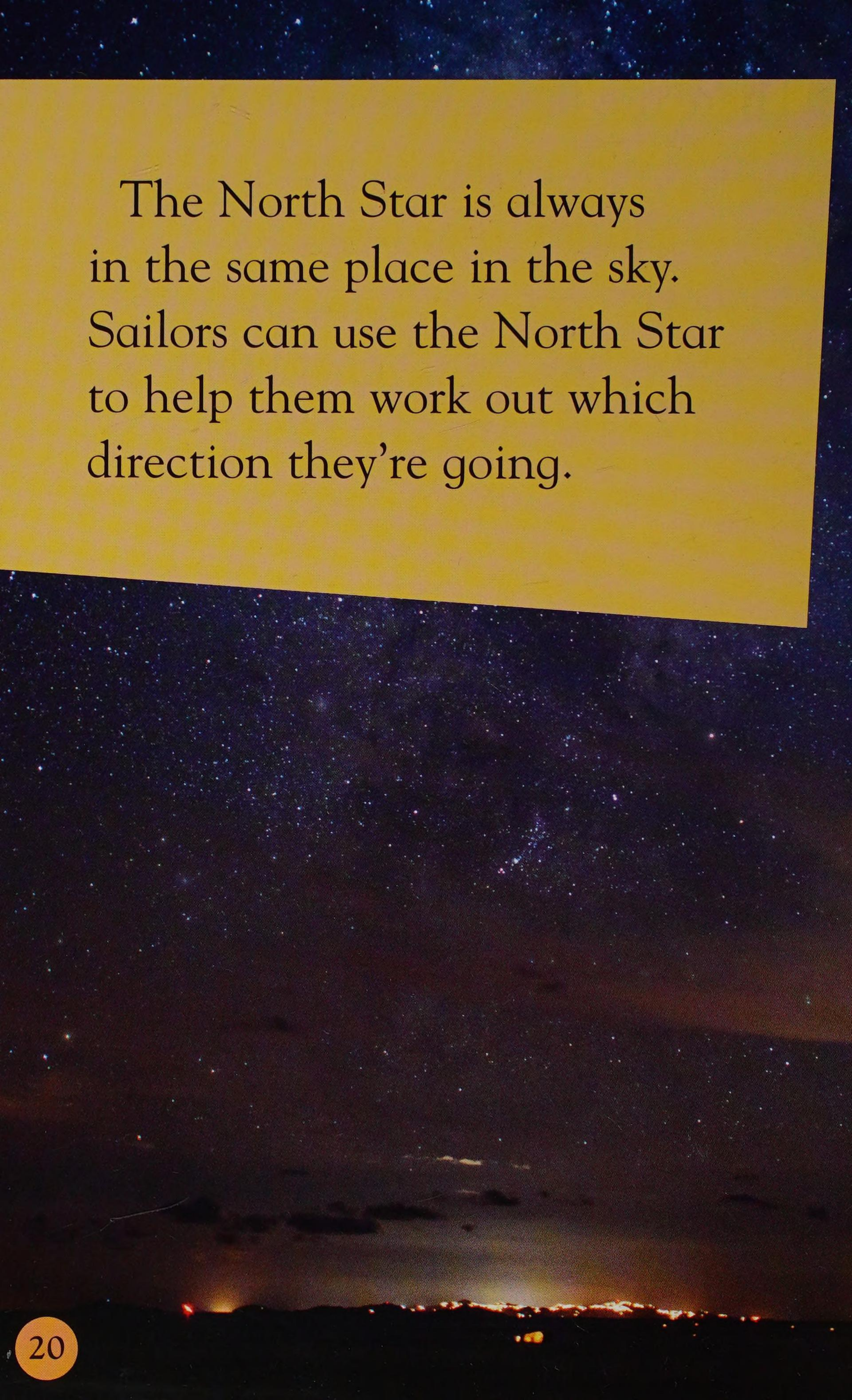
Big Dipper




There are many constellations in the sky. The Big Dipper is a constellation that looks like a saucepan. The two stars at the end of the Big Dipper point to the North Star. The North Star is very bright.



The Southern Cross is another constellation.

A night sky filled with stars and the Milky Way galaxy. A yellow rectangular overlay is positioned in the upper half of the image, containing text. The bottom of the image shows a dark horizon with some distant lights.

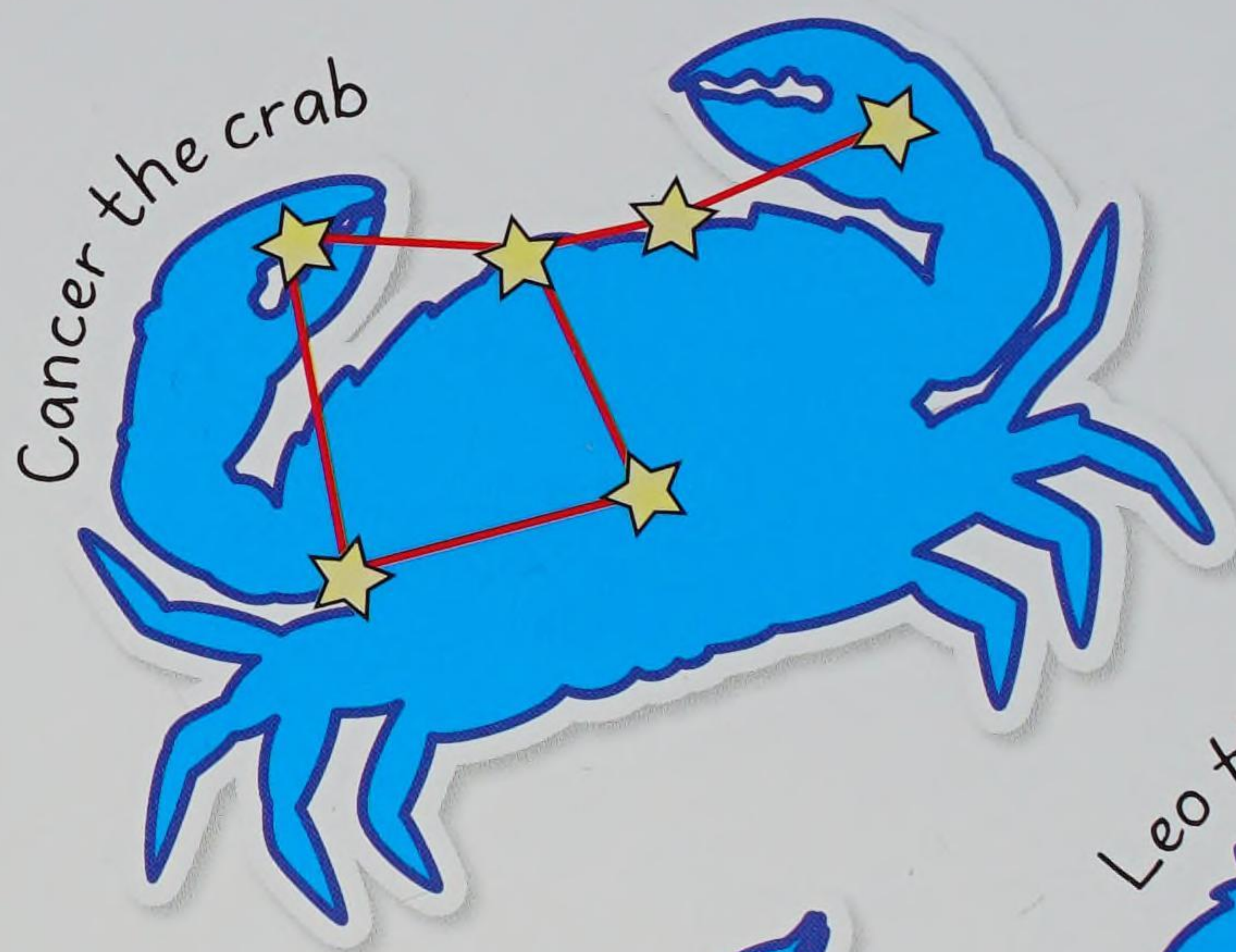
The North Star is always
in the same place in the sky.
Sailors can use the North Star
to help them work out which
direction they're going.

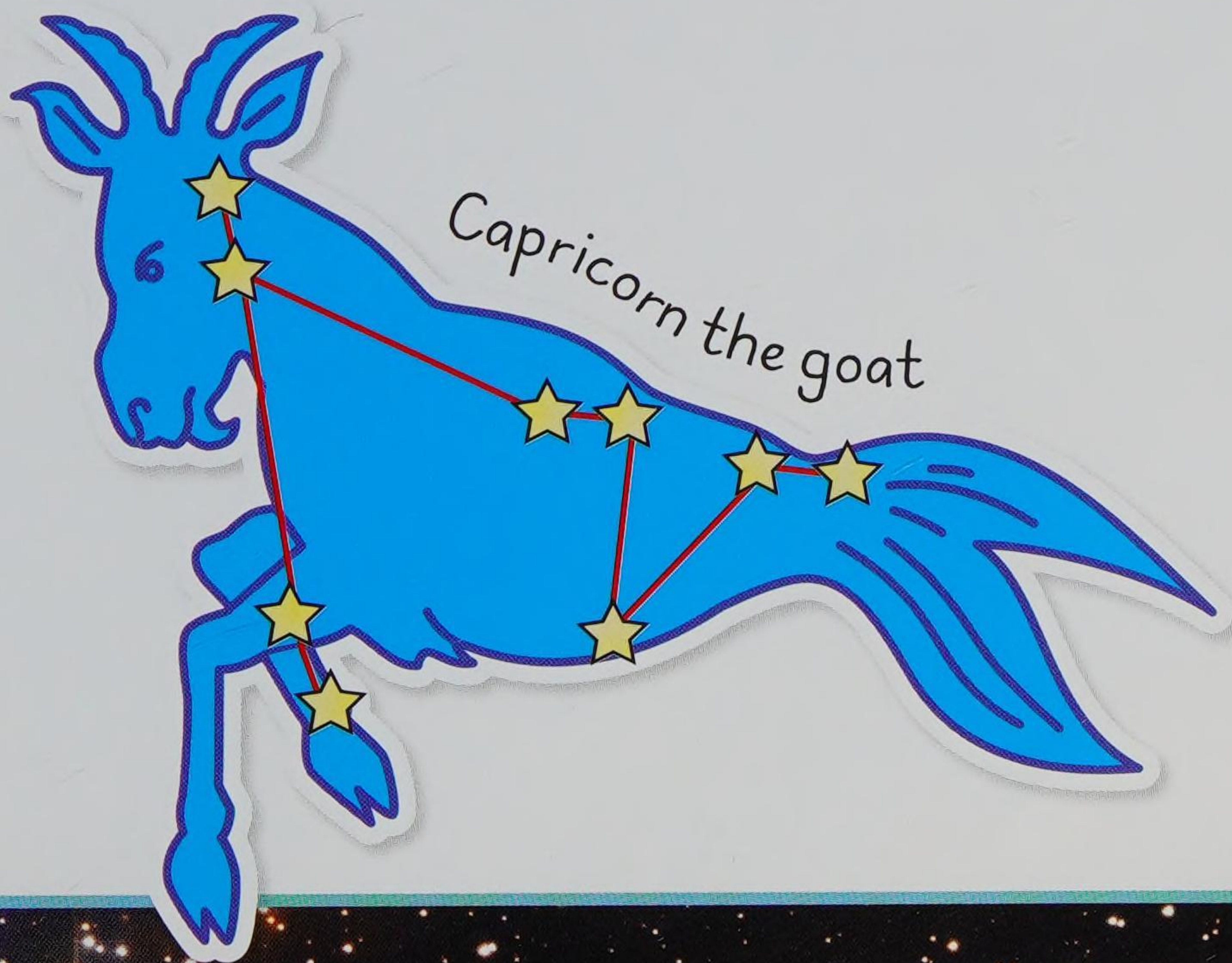
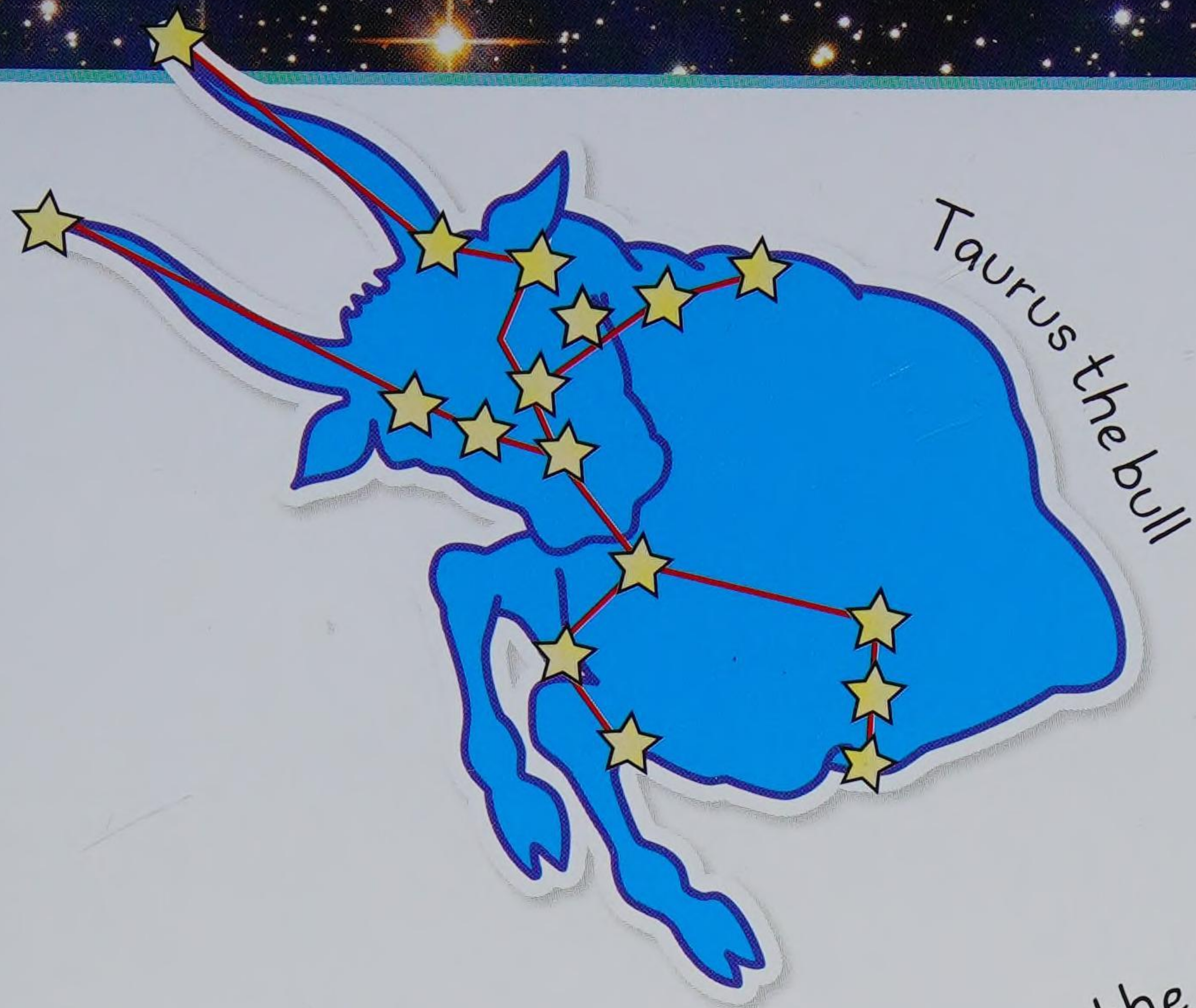


North Star

The Sky Zoo

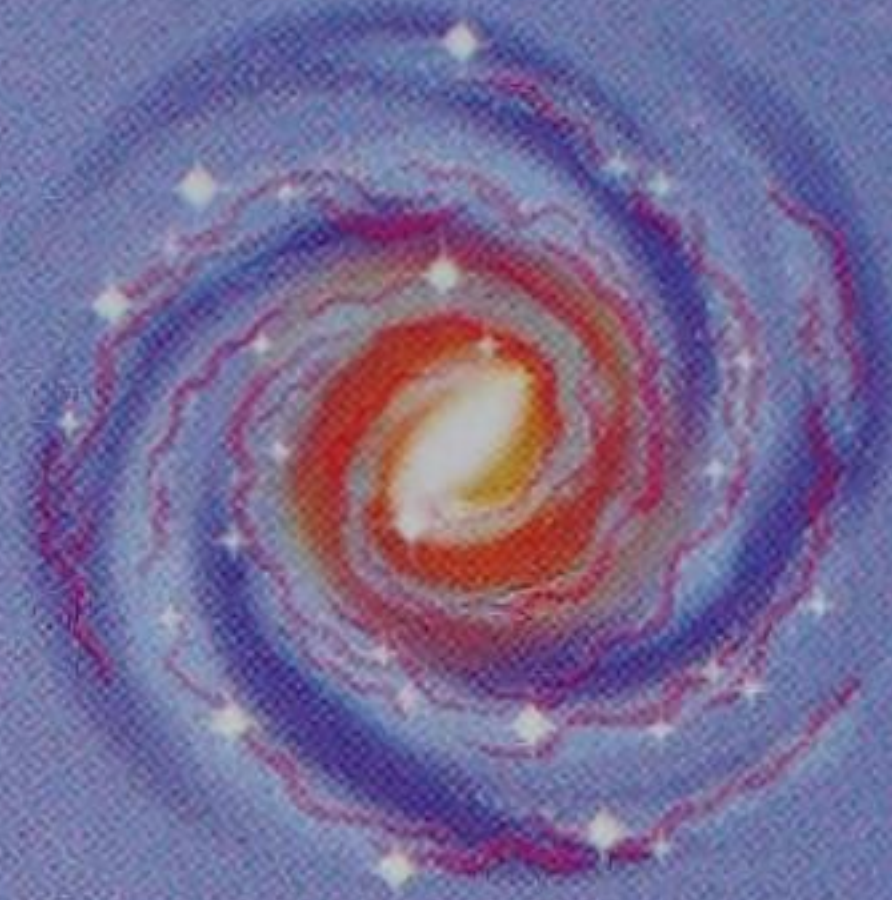
Many constellations are pictures of animals. The constellations shown here are from a special group of constellations called the zodiac.





Chapter 3

Groups of Stars



Stars gather in huge groups called galaxies. A galaxy is a group of billions of stars moving together in space.



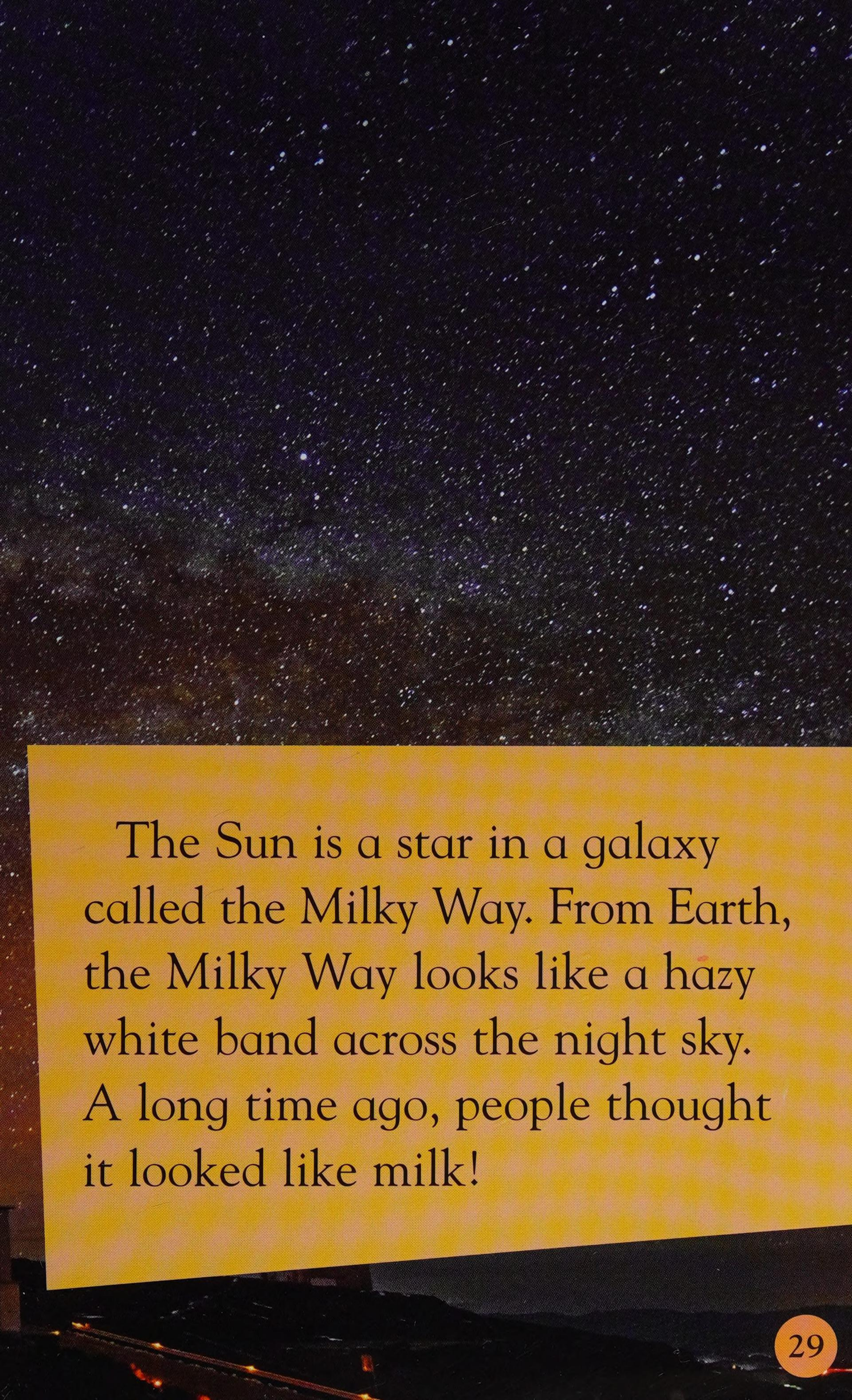


Sometimes, groups of galaxies
move through space together.
That's a lot of stars!

Galaxies can be different shapes
and sizes. These are some common
galaxy shapes.







The Sun is a star in a galaxy called the Milky Way. From Earth, the Milky Way looks like a hazy white band across the night sky. A long time ago, people thought it looked like milk!



The **Universe** is truly enormous.
It is filled with billions of galaxies.
The galaxies are filled with
billions of stars.

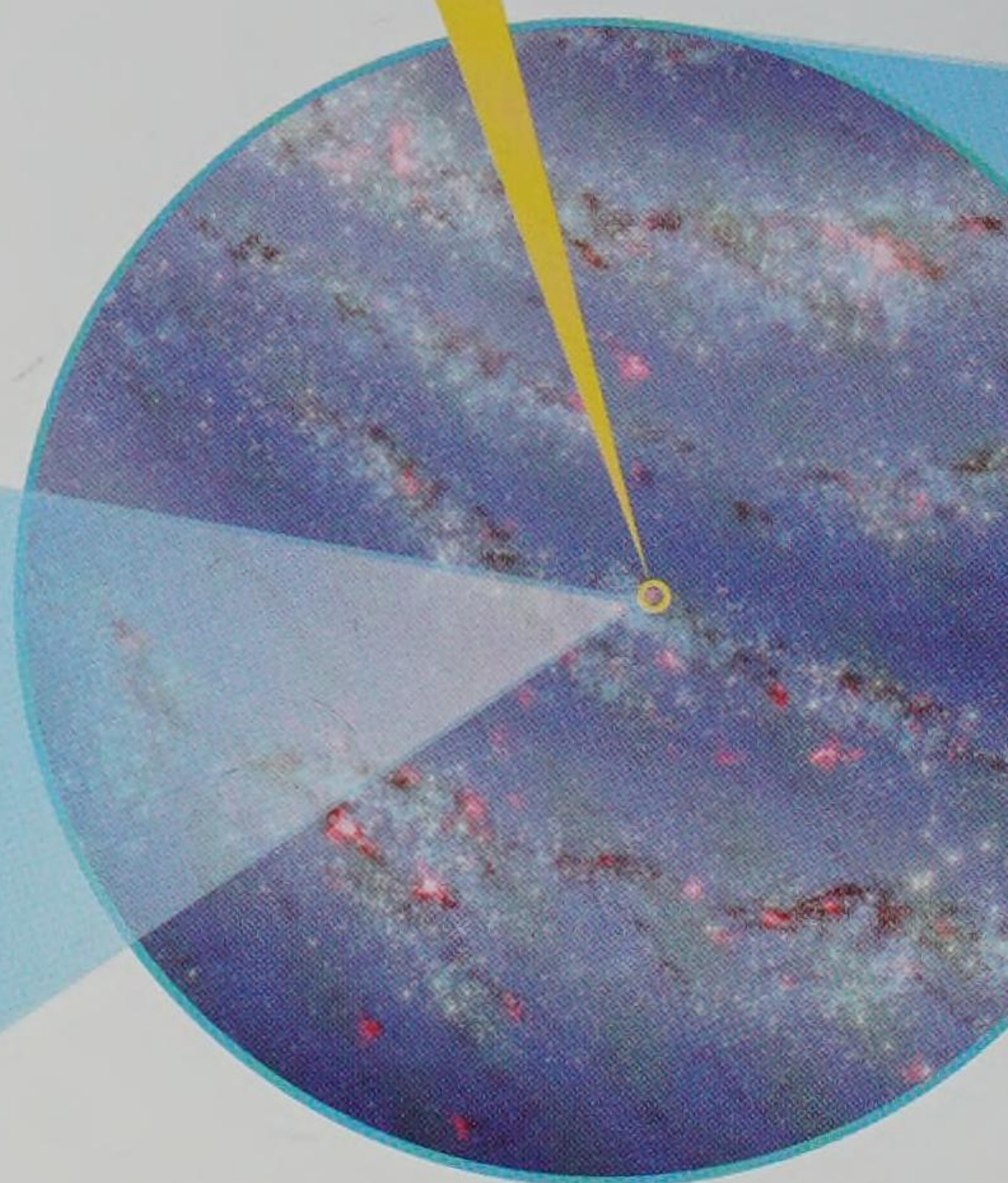
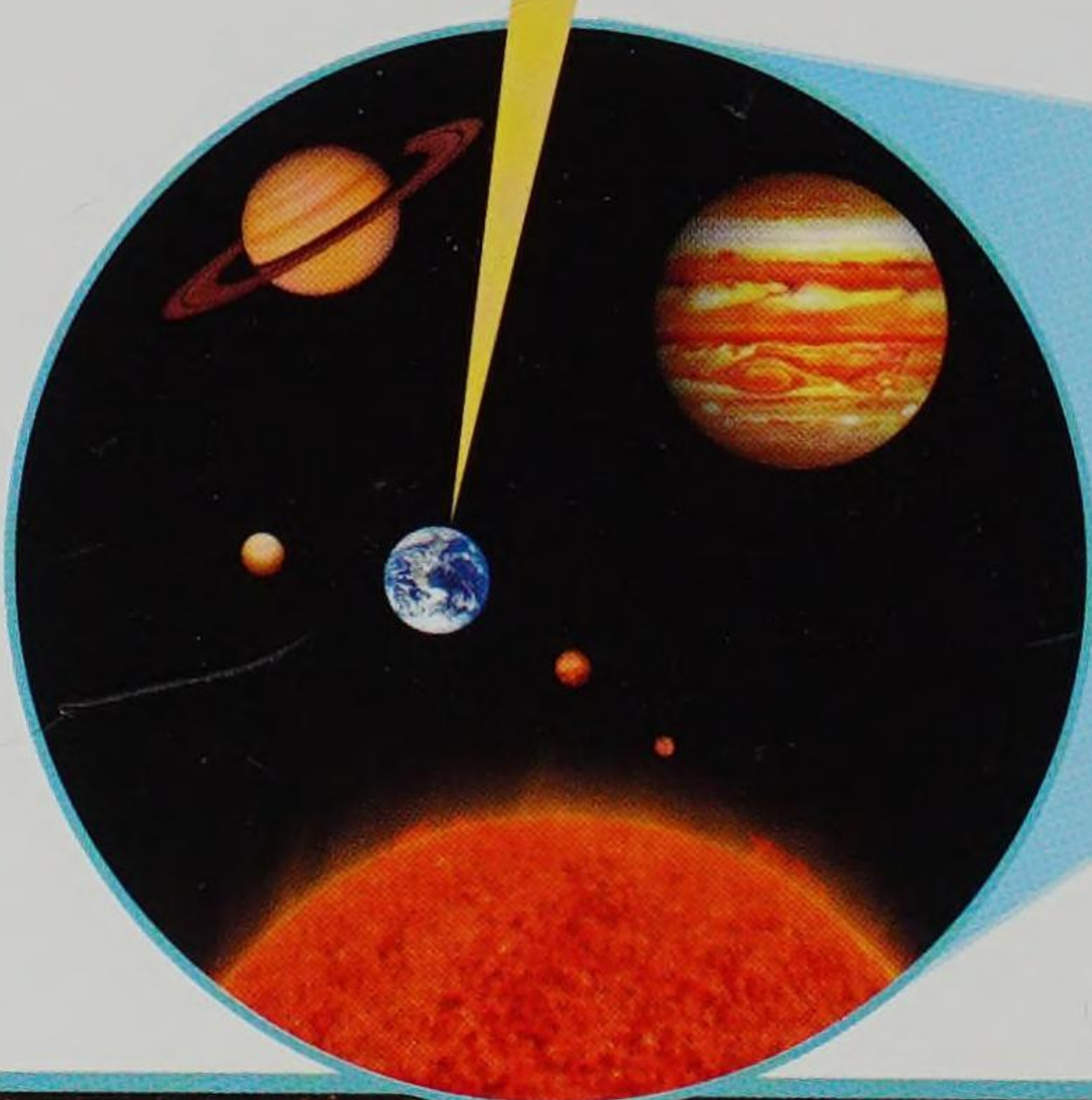



Our Place in Space

Earth may seem huge to you, but it is only a small part of space. So where exactly are we?

We are here!
Planet Earth
orbits the Sun,
our special star.

The Sun is one of
billions of stars in
our galaxy.





Our galaxy is called
the Milky Way.

There are billions
of galaxies in
the Universe.

Chapter 4

Watching the Stars



If you want to watch the stars,
wait for a clear night when there
are no clouds.



Find a place far away from
the bright lights of towns
or cities.

Using a telescope or binoculars
will make the stars look closer.
Practice will make you a
real stargazer!

Telescope



Binoculars



These are some things that you might see in the night sky.

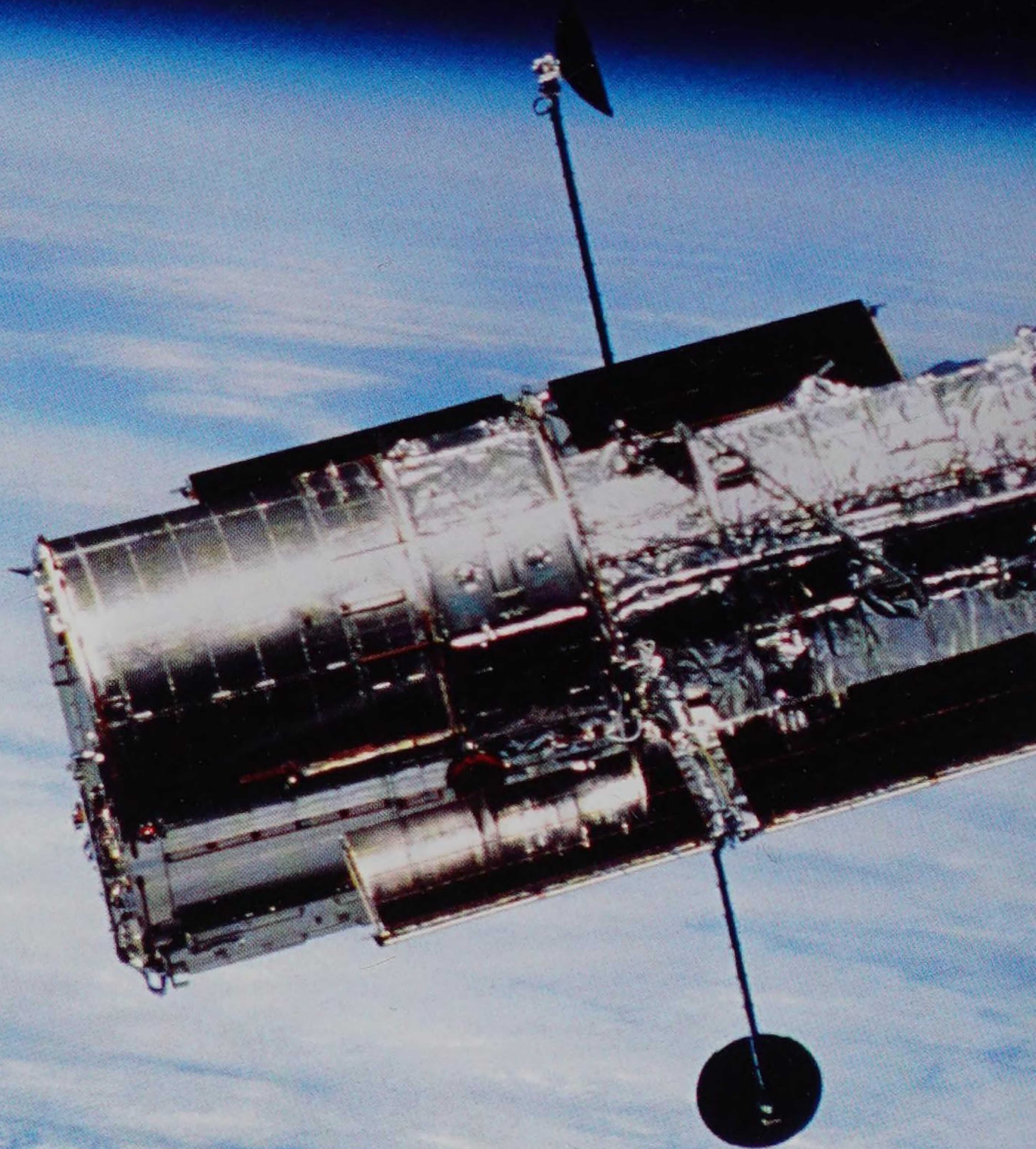


You might see a galaxy called Andromeda.



The Moon is a big lump of rock among the stars. The Moon orbits around Earth.

The Hubble Space Telescope orbits Earth. It takes amazing pictures from space, such as these far-off stars.







A scientist who studies the stars
and space is called an astronomer.



Now it's your turn to look up
at the night sky. What do you see?

Star Map

A star map can help you to find stars and constellations in the sky.



Stars and Galaxies Quiz

- 1 ★ What type of star is the Sun?
- 2 ★ What are star “pictures” called?
- 3 ★ What are huge groups of stars called?
- 4 ★ What is the name of the galaxy we live in?
- 5 ★ What does an astronomer study?

Answers on page 45.

Glossary

billions

a very large number, more than 1,000,000,000

dwarf star

a star that is not as big or as bright as a giant star or a supergiant star

gas

airlike substance that has no fixed shape

myth

very old story known by many people

orbit

to move around something in space

stargazer

a person who likes to look at or study stars

Solar System

the Sun, and the objects in space that orbit around it, including Earth and the other planets

supergiant star

largest and brightest type of star

Universe

everything that exists including stars, planets, and galaxies

Answers to Stars and Galaxies Quiz:

1. Yellow dwarf star; 2. Constellations; 3. Galaxies; 4. Milky Way; 5. The stars and space

Guide for Parents

This book is part of an exciting four-level reading series for children, developing the habit of reading widely for both pleasure and information. These chapter books have a compelling main narrative to suit your child's reading ability. Each book is designed to develop your child's reading skills, fluency, grammar awareness, and comprehension in order to build confidence and engagement when reading.

Ready for a *Level 2* book

YOUR CHILD SHOULD

- be familiar with using beginning letter sounds and context clues to figure out unfamiliar words.
- be aware of the need for a slight pause at commas and a longer one at periods.
- alter his/her expression for questions and exclamations.

A VALUABLE AND SHARED READING EXPERIENCE

For many children, reading requires much effort, but adult participation can make this both fun and easier. So here are a few tips on how to use this book with your child.

TIP 1 Check out the contents together before your child begins:

- read the text about the book on the back cover.
- flip through the book and stop to chat about the contents page together to heighten your child's interest and expectation.
- make use of unfamiliar or difficult words on the page in a brief discussion.
- chat about the nonfiction reading features used in the book, such as headings, captions, or labels.

TIP 2 Support your child as he/she reads the story pages:

- give the book to your child to read and turn the pages.
- where necessary, encourage your child to break a word into syllables, sound out each one, and then flow the syllables together. Ask him/her to reread the sentence to check the meaning.
- you may need to help read some new vocabulary words that are difficult for your child to sound out.
- when there's a question mark or an exclamation point, encourage your child to vary his/her voice as he/she reads the sentence. Demonstrate how to do this if it is helpful.

TIP 3 Chat at the end of each page:

- ask questions about the text and the meaning of the words used. These help to develop comprehension skills and awareness of the language used.

A FEW ADDITIONAL TIPS

- Always encourage your child to try reading difficult words by themselves. Praise any self-corrections, for example, "I like the way you sounded out that word and then changed the way you said it, to make sense."
- Try to read together everyday. Reading little and often is best. These books are divided into manageable chapters for one reading session. However, after 10 minutes, only keep going if your child wants to read on.
- Read other books of different types to your child just for enjoyment and information.

Series consultant, **Dr. Linda Gambrell**, Distinguished Professor of Education at Clemson University, has served as President of the National Reading Conference, the College Reading Association, and the International Reading Association.

Index

astronomer 40

Big Dipper 18–19

binoculars 36

constellation 14–19,
22–23, 42

dwarf star 12

Earth 7, 8, 9, 10,
29, 32, 38

galaxies 24–31

giant star 12

Hubble Space

Telescope 38

Milky Way galaxy
28–29, 33

myth 17

North Star 18–19,
20–21

Orion 14–17

Solar System 10–11

Southern Cross 18

stargazer 36

starlight 4, 7

star map 42

Sun 8–9, 10, 11,
12, 29, 32

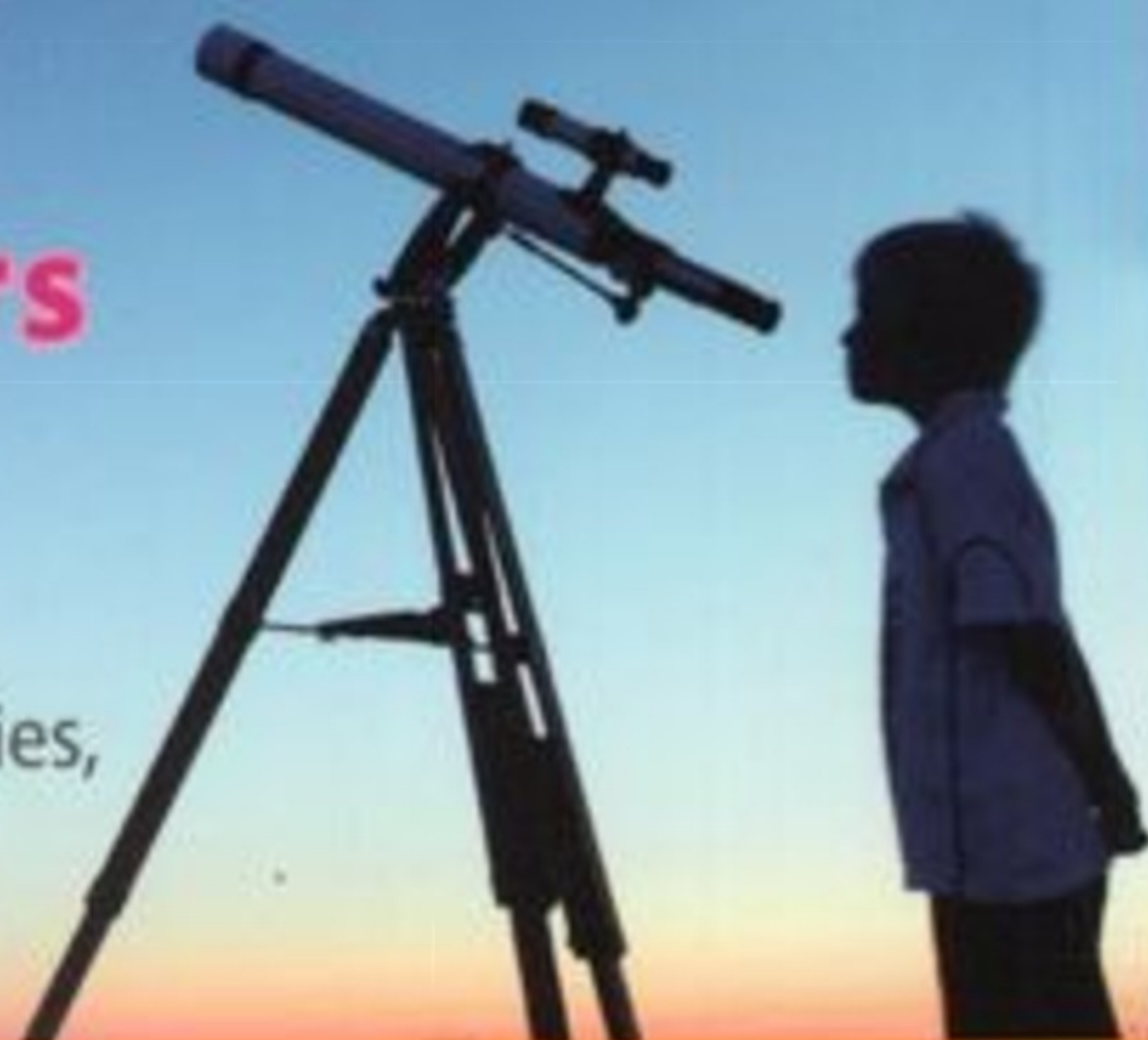
supergiant star 12

telescope 36–37

Universe 30, 33

Read about the stars in the night sky!

What are stars made of and why do they twinkle? Find out all about stars and galaxies, and get some tips for stargazing, too!



LEARN TO READ, THEN READ TO LEARN!

Engaging stories and fun, interactive pages build reading skills • Developed in consultation with leading literacy experts • Helps build a lifelong love of reading

A level for every reader



LEARNING
TO READ



BEGINNING
TO READ



BEGINNING
TO READ
ALONE



READING
ALONE

Look out
for other
great titles!



www.dk.com

\$3.99 USA
\$4.99 Canada

ISBN 978-1-4654-5863-6 Printed in China

